

Notice of Allowability

Application No.

09/917,842

Applicant(s)

CHIN ET AL.

Examiner

Art Unit

Alexander J. Kosowski

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 12/7/05.
2. ☒ The allowed claim(s) is/are 1-11,13-15,17-19,25,27-34,38-40,42-47 and 51-54.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 12/19/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date ____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

DETAILED ACTION

1) Claims 1-11, 13-15, 17-19, 25, 27-34, 38-40, 42-47 and 51-54 are presented for examination in light of the amendment filed 12/7/05 and the Examiner's Amendment below.

EXAMINER'S AMENDMENT

2) An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Keith Taboada on 2/17/06.

The application has been amended as follows:

20-24. (Cancelled)

25. (Currently Amended) An apparatus for processing a substrate comprising: a deposition chamber wherein the deposition chamber is divided into two or more deposition regions that are integrally connected to one another, at least one of said regions being adapted to support deposition of a monolayer upon a surface of a substrate; and

a wafer support disposed in the deposition chamber and having a horizontal wafer supporting surface, wherein the wafer support is moveable between two or more interconnected deposition regions. ~~The apparatus of claim 20 wherein one of said deposition regions is vertically stacked above another of said deposition regions.~~

26. (Cancelled)

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27. (Currently Amended) The apparatus of ~~claim 20~~ claim 25 in which said at least one deposition region is adapted to support deposition of a second monolayer

28. (Currently Amended) The apparatus of ~~claim 20~~ claim 25 in which said at least one deposition region is adapted to support deposition via chemisorption.

29. (Currently Amended) An apparatus for processing a substrate, comprising:
a deposition chamber wherein the deposition chamber is divided into two or more deposition regions that are integrally interconnected to one another, at least one of said deposition regions being adapted to support deposition of a first monolayer upon a surface of a substrate and at least one of said deposition regions being optionally sealable from the other deposition regions, and wherein one of said deposition regions is vertically stacked above another of said deposition regions; and

a wafer support disposed in the deposition chamber and configured to support the substrate horizontally, wherein the wafer support is moveable between two or more interconnected deposition regions.

30. (Previously Presented) The apparatus of claim 29 in which said at least one regions are adapted to support deposition of a second monolayer.

31. (Previously Presented) The apparatus of claim 29 in which at least one of said regions is sealed so as to minimize intermixing of deposition gases within two or more deposition regions.

32. (Previously Presented) The apparatus of claim 29 in which said chamber further comprises an orifice for each of said deposition regions, each orifice adapted to provide process gas to a respective deposition region

33. (Currently Amended) The apparatus of ~~claim 22~~ claim 32, in which each orifice is adapted to provide differing process gases.

34. (Currently Amended) The apparatus of ~~claim 22~~ claim 32 in which at least one of said orifices is adapted to provide process gas and purge gas.

35-37. (Cancelled)

38. (Previously Presented) The apparatus of claim 29 in which said at least one deposition region is adapted to support deposition via chemisorption.

39. (Previously Presented) The method of claim 19 further comprising:
flowing a purge gas into at least one of the integrally connected deposition regions between the introduction of the first and second deposition gases.

40. (Previously Presented) The method of claim 19, wherein the step of moving the wafer positioned on the substrate support to the second deposition region further comprises:
moving the substrate support vertically.

41. (Cancelled)

42. (Previously Presented) An apparatus for processing a substrate, comprising:
a deposition chamber body having a sealable port configured for horizontal entry and egress of a substrate;
at least two or more deposition regions defined in the chamber body, at least a first deposition region of said deposition regions is adapted to support vertical deposition of a first monolayer upon a surface of a substrate, wherein one of said deposition regions is vertically stacked above another of said deposition regions; and
a wafer support disposed in the deposition chamber, wherein the wafer support is moveable between two or more interconnected deposition regions.

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43. (Previously Presented) The apparatus of claim 42, wherein at least one of said deposition regions is sealable from the other deposition regions

44. (Previously Presented) The apparatus of claim 42, wherein said at least a second deposition region is adapted to support deposition of a second monolayer.

45. (Previously Presented) The apparatus of claim 42 in which at least one of said regions is sealed so as to minimize intermixing of deposition gases within two or more deposition regions.

46. (Previously Presented) The apparatus of claim 42 in which said chamber further comprises an orifice for each of said deposition regions, each orifice adapted to provide process gas to a respective deposition region

47. (Previously Presented) The apparatus of claim 46, in which each orifice is adapted to provide differing process gases.

48-50. (Cancelled)

51. (Previously Presented) The method of claim 17, wherein the deposition chamber is a vacuum deposition chamber.

52. (Currently Amended) The apparatus of ~~claim 20~~ claim 25, wherein the deposition chamber is a vacuum deposition chamber.

53. (Previously Presented) The apparatus of claim 29, wherein the deposition chamber is a vacuum deposition chamber.

54. (Previously Presented) The apparatus of claim 42, wherein the deposition chamber is a vacuum deposition chamber.

Allowable Subject Matter

- 3) Claims 1-11, 13-15, 17-19, 25, 27-34, 38-40, 42-47 and 51-54 are allowed.

The following is an examiner's statement of reasons for allowance:

Referring to claims 1-11, 13-15 and 17-19, the claims are allowed for the reasons cited by applicant's representative in the "Remarks" section of the amendment filed 12/7/05.

Referring to claims 25, 29 and 42, neither Sandhu (U.S. PG PUB 2002/0195056), Tran (U.S. Pat 6,455,098), nor Gornicki (U.S. Pat 6,200,441), together or in combination with the prior art of record, specifically teach an apparatus for processing a substrate comprising a deposition chamber divided into two or more deposition regions vertically stacked with a wafer support moveable between the interconnected deposition regions, in combination with the remaining elements or features of the claimed invention.

Referring to all other allowed claims, the claims are dependent on the allowed claims above, and are therefore allowable.

- 4) Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

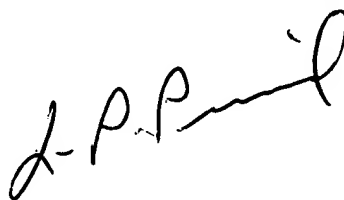
- 5) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 571-272-3744. The examiner can normally be reached on Monday through Friday, alternating Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. In addition, the examiner's RightFAX number is 571-273-3744.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Alexander J. Kosowski
Patent Examiner
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A handwritten signature in black ink, appearing to read 'L. Picard', written in a cursive style.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100